

Application No. 10/021,929
Amendment dated September 10, 2004
Reply to Office Action of May 14, 2004

REMARKS/ARGUMENTS

Responsive to the Official Action mailed May 14, 2004, applicants have amended the claims of their application in an earnest effort to place this case in condition for allowance. Specifically, claims 13, 14, 16, and 17 have been canceled, and claims 12, 15, and 18-22 amended. Reconsideration is respectfully requested.

As discussed in the Specification, the present invention seeks to provide improved molded constructs comprising fibrous material by *controlling the thermal history* of the construct components. In this fashion, the physical properties of the resulting construct are significantly enhanced.

The present invention contemplates that a fibrous mat, comprising a heat-activated binder component, is first subjected to an elevated temperature for an incubation period, so that the fibrous mat reaches the activation temperature of the binder component. The fibrous mat is *thereafter cooled* to a temperature less than the activation temperature of the binder component.

Fiber-to-fiber bonds solidify and form a durable integration of the fibrous material into a unified pre-form. Notably, as the polymer component fibrous material returns to its cooled state, the molecular structure of the polymer component has been affected to yield an ultimate construct of enhanced physical properties.

Thereafter, the fibrous mat is subjected to an elevated temperature, and compressed to a thickness greater than or equal to a thickness of the final molded

construct, and thereafter cooled. Again, the present invention contemplates that a specific thermal history for the thermal construct be created to enhance its ultimate physical properties. Finally, the fibrous construct is thereafter be thermoformed.

The present invention also contemplates that the fibrous mat may be provided with one or more facing layers during its treatment.

In the Action, the Examiner has rejected the pending claims under 35 U.S.C. §103, with reliance upon U.S. Patent No. 4,840,832, to Weinle et al., and U.S. Patent Publication No. 2002/0160682, to Zeng et al. However, it is respectfully submitted that neither of these references teach or suggest a molded construct formed in accordance with the present invention, specifically, a construct wherein a specific thermal history is created to enhance physical properties of the resultant article. The Weinle et al. patent contemplates formation of an automobile headliner from a batt of polymeric fibers compressed and molded into a contoured shape. Figure 4 schematically illustrates the steps involved in producing the batt from which the headliner is formed. The process is discussed at column 5, line 50 *et seq.*:

The blended fibers are then formed into a web by suitable web-forming equipment, such as by air-laying, garnetting, or as indicated at 32, by carding. To build-up the desired thickness and basis weight, the web may be cross-lapped, as indicated at 34, using conventional cross-lapping machinery. The thus formed web is then optionally subjected to a needling operation 36, during which the batt is needlepunched lightly to form a coherent self-sustaining batt of sufficient stability to permit it to be

subsequently handled and formed to a roll. Alternatively, the web may be heat-stabilized by passing heated air or steam through the batt.

Notably, there is no teaching or suggestion in this reference of providing an *incubation period, followed by cooling* for controlling the thermal history of the fibrous construct, in accordance with the present invention.

This is made clear by the further description of the process of Weinle et al. At column 5, line 63 *et seq.*, the Weinle et al. patent further states:

As illustrated in FIG. 5, the roll 40 is thereafter unrolled and cut to size, and optionally combined with a form layer 22 and a fabric surface layer 24. These materials are placed in a heated oven and heated at a temperature and for a time sufficient to activate the potentially adhesive characteristics of the thermoplastic binder fibers. The heated fibrous batt is then molded, as indicated at 52, into the desired contoured configuration.

As is further evident, there is no teaching or suggestion in Weinle et al. of controlling the thermal history of the fibrous construct, nor is there any recognition or teaching in this reference of *compressing to a thickness greater than or equal to a thickness of the final construct*, followed by cooling, and thermoforming, as specifically set forth in the pending claims.

It is respectfully submitted that the Zang et al. publication is likewise deficient in teaching or suggesting the present invention. This publication contemplates formation of an acoustical insulation product from a combination of primary fibers 16

Application No. 10/021,929
Amendment dated September 10, 2004
Reply to Office Action of May 14, 2004

and binder fibers 20 "so that upon heating the insulation product, the two materials will respond differently" (column 2, paragraph [0021]). Again, it is respectfully maintained that this reference neither teaches or suggests the formation of a molded construct from fibrous material, wherein the thermal history of the fibrous material is controlled by providing an *incubation period, followed by cooling*, with subsequent heating and compression to a thickness greater than or equal to a final molded construct thickness, and the construct thereafter cooled, and subsequently thermoformed.

In view of the foregoing, formal allowance of claims 12, 14-15, and 18-22 is believed to be in order and is respectfully solicited. Should the Examiner wish to speak with applicants' attorneys, they may be reached at the number indicated below.

The Commissioner is hereby authorized to charge any additional fees which may be required in connection with this submission to Deposit Account No. 23-0785.

Respectfully submitted,

By 
Stephen D. Geimer, Reg. No. 28,846

WOOD, PHILLIPS, KATZ, CLARK & MORTIMER
500 West Madison Street, Suite 3800
Chicago, Illinois 60661-2511
312/876-1800

Application No. 10/021,929
Amendment dated September 10, 2004
Reply to Office Action of May 14, 2004

CERTIFICATE OF MAILING

I hereby certify that this paper is being deposited with the United States Postal Service with sufficient postage at First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on **September 10, 2004**.

